Patent Claims

1. A method for detecting and quantifying first biopolymers (1) that are located in a liquid, where second biopolymers (2) which have a specific affinity to the first biopolymers (1) to be detected are bonded to the surface of a first electrode (E1), and where the first and at least one second electrode (E2) are in contact with the liquid, having the following steps:

a) application of a voltage and/or current across the first electrode (E1) and the second electrode (E2), and

b) measurement of a direct change in the voltage and/or current caused by addition of the first biopolymers (1) onto the second biopolymers (2).

2. A method as claimed in claim 1, where in step b), a direct-voltage signal is measured.

3. A method as claimed in claim 2, where the measurement is carried out as a cyclovoltammetric measurement.

4. A method as claimed in claim 2 or 3, where, for the detection and quantification of the first biopolymer (1), the measured current or the measured voltage is plotted against time and integrated over at least one peak.

5. A method as claimed in claim 1, where an alternating-current signal is measured phase-sensitively.

6. A method as claimed in claim 5, where the alternating-current signal is superimposed on a cyclic direct-current signal.

7. A method as claimed in claim 1, where the impedance is measured by measuring the voltammetric signals at varying frequency.

8. A method as claimed in one of the preceding claims, where, before step a), the first biopolymers (1) are increased in concentration at the surface of the first electrode (E1) by application of a voltage and/or current.

9. A method as claimed in claim 8, where the polarity is reversed cyclically.

10. A method as claimed in claim 8 or 9, where the first electrode (E1) with the first biomolecules (1) increased in concentration at it is removed from the liquid and, for the measurement, brought into contact with a defined measurement solution.

11. A method as claimed in one of the preceding claims, where the second biopolymer (2) is bonded by means of one end to the surface of the first electrode (E1) via a covalent bond or via a linker.

12. A method as claimed in claim 11, where the first electrode (E1) is made of one of the following materials: plastic, ceramic, glass or metal.

13. A method as claimed in one of the preceding claims, where the first biopolymer (1) is a single-stranded DNA or RNA which is complementary to the second biopolymer (2).

14. A method as claimed in claim 13, where in step b), the change in voltage and/or current caused by hybridization of the biopolymers (1, 2) is measured.